EPA Safer Choice Partner of the Year Award

Nomination Application for:
Apple

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At Apple, people come first in everything we do, and our approach to chemical management is no exception. We are committed to the goal of removing all harmful chemicals from our manufacturing processes to ensure that the people working in our supply chain, and our customers, are safe as our products are built and used.

Identifying safer and more environmentally friendly substitutions is a continuous effort that prioritizes those alternative chemicals that will have the biggest impact. The chemicals we select are meticulously managed, monitored, and tracked directly by Apple employees, and we are continually raising the bar for the identification and use of safer alternatives, and working to provide these learnings to others in our industry and beyond.

In 2002, we introduced the Apple Regulated Substances Specification (RSS)—our own set of global chemicals restrictions that goes beyond regulatory requirements and is based on best industry practices or toxicology properties.

In 2006, we built our own Environmental Testing Lab, where our chemists look for any potentially harmful substances and test products to evaluate compliance with the RSS. Since the lab's opening, we have expanded it to more than 30 times its original size and have regularly updated it with state-of-the-art equipment.

We screen our materials with comprehensive risk assessment tools, including EPA's Safer Choice, CPA's GreenScreen®, and ToxFMD Screened Chemistry®, to evaluate substances against 18 different hazards, including carcinogens, mutagens, and endocrine disruptors.

Each year, Apple documents our progress in this area in both the Apple Supplier Responsibility and Apple Environment Reports. Our work in the areas of process chemicals and on smarter chemistry more broadly can be found, in detail, in the reports contained on these pages:
https://www.apple.com/supplier-responsibility/
https://www.apple.com/environment/

Strengthening Compliance in the Apple Supply Chain

In 2013, we launched our Chemical Management Program to help suppliers develop a comprehensive approach to managing chemicals safely, and to transparently share information with their employees about the chemicals being used in their workplace — both of which are requirements evaluated in every Apple conducted supplier assessment.

The establishment of our Chemical Management Program set an even higher baseline for our supplier standards moving forward. Suppliers, for instance, must comply with Apple's RSS for all materials and goods it manufactures or provides to Apple, and are required to produce analytical test reports from a third-party certified laboratory to prove compliance with the RSS. Suppliers must establish and implement a written program to track, review, and approve the use of all hazardous chemicals, and obtain internal Environmental, Health and Safety (EHS) approval for all new purchases, and maintain an up-to-date chemical inventory. Suppliers must also communicate the risks of hazardous chemicals — and subsequent control mechanisms to mitigate those risks — to their employees.

As of 2019, the program, which has grown to more than 100 participating supplier facilities, enables our partners to shift to safer chemicals and improve general safety, awareness, and training.

We take extra care when a new chemical is proposed for use. In 2019, we assessed more than 110 new chemicals, which included reviewing product formulations and test reports, understanding the specific circumstances for use, and conducting exposure assessments to proactively eliminate risks to people and the environment as a result of using the proposed chemicals.

Green Chemistry in the Apple Supply Chain — Accelerating Progress

While our Chemical Management Program initially focused on ensuring compliance with the RSS, we decided we needed to go further by accelerating the use of broader green chemistry principles throughout our operations. This included the establishment of our Green Chemistry Advisory Board in 2015, a group of the world's leading toxicologists, researchers, and academics focused on integrating green chemistry into Apple's products and supply chain.

Also in 2015, we created a consolidated inventory of chemicals that are used at supplier final assembly facilities, but don't reside in our products. While suppliers have always been required to maintain chemical inventories on-site as the basis for their hazard assessment and controls, we recognized that we could accelerate progress by driving the transparent reporting of process chemicals to Apple, so we could identify the priority areas for substitutions to focus on those that have the potential for most impact.

The first step was to comprehensively map the process chemicals used in our final assembly facilities, including the volumes consumed, and the specific circumstance of how they were used or applied. We then evaluated control measures, such as ventilation, personal protective equipment, and worker training programs. The mapping resulted in the further identification — and continued replacement of GreenScreen Benchmark 1 and Benchmark 2 chemicals used at all final assembly sites with safer alternatives.

Based on what we learned from these inventories, we began to prioritize and focus our efforts on cleaners and degreasers, which we determined were the most used final assembly process chemicals in our supply chain by volume. Cleaners and degreasers are also often used at the stage in the production process that requires more manual work, increasing the quantity and duration of time that supplier employees come into contact with these kinds of chemicals.

In order to scale our impact and encourage wider adoption of safer cleaners and degreasers in our supply chain, we knew we needed to simplify the process of identifying and adopting operationally effective safer alternatives.

In 2017, leveraging rigorous hazard assessment protocols such as EPA's Safer Choice, GreenScreen®, and SciVeraLENS, we developed an internal Apple Safer Cleaner Criteria against which we could assess cleaners and degreasers for use at our final assembly sites. We began to test cleaners against that criteria to develop a list of Apple-approved cleaners for our suppliers to use.

Apple's Safer Cleaner Criteria

We developed our original Safer Cleaner Criteria in 2017, a comprehensive criteria for assessing all cleaners used to assemble Apple products covering human health and environmental endpoints. The assessment of a cleaner occurs in three stages:

1) Supplier disclosure of the formulation
2) Assessment of individual ingredients
3) Rating of the mixture

Over the course of these three stages, our team is able to perform an assessment of the material to determine its suitability for use in Apple supplier facilities.

TABLE 1: *APPLE SAFER CLEANER HAZARD RATING CRITERIA*

Safer Chemical	Contains only chemicals that are listed as U.S. EPA Safer Choice Chemical Ingredients for solvents, or GreenScreen Benchmark 3 chemicals (Use but Still Opportunity for Improvement) or GreenScreen Benchmark 4 chemicals (Prefer—Safer Chemical), or equivalent. Chemicals that are U.S. EPA Safer Choice Chemical Ingredients for functional use classes other than solvents are evaluated on a case-by-case basis.
Use but look for opportunities to improve	Contains one or more GreenScreen Benchmark 2 or SciVera Lens Haz Cat Score 2 chemicals that were assigned a score of "Moderate" for the following hazard endpoints (carcinogenicity, mutagenicity/genotoxicity, reproductive toxicity, developmental toxicity, endocrine activity, skin sensitization, or respiratory sensitization) based on limited or lower confidence evidence of toxicity. OR Contains one or more GreenScreen Benchmark 2 or SciVera Lens Haz Cat Score 2 chemicals that were assigned a score of "High" or "Very High" for skin irritation, respiratory irritation, eye irritation, neurotoxicity, or systemic toxicity, but contains no orange or red category chemicals.
Search for Safer Alternatives	Contains one or more GreenScreen Benchmark 2 or SciVera Lens Haz Cat Score 2 chemicals that were assigned a score of "Moderate" for the following hazard endpoints (carcinogenicity, mutagenicity/genotoxicity, reproductive toxicity, developmental toxicity, endocrine activity, skin sensitization, or respiratory sensitization) based on solid evidence of toxicity, but contains no red category chemicals.
Do not use; chemical of high concern	Contains one or more GreenScreen Benchmark 1 chemicals (Avoid - Chemical of High Concern) or SciVera Lens Haz Cat Score 1 chemical, or equivalent.

Only formulations with Green and Yellow ingredients are allowed to be used by Apple's supplier final assembly sites. Since 2017, using this criteria, all Apple supplier final assembly sites have utilized only these safer alternatives, representing 900 metric tons of cleaners used each year by more than 87,000 workers.

In 2019 we assessed 33 new cleaners, bringing the total count of safer cleaner and degreaser alternatives that have been approved for use in Apple's supply chain to more than 50.

Communicating and Scaling the Use of Safer Chemical Alternatives

In addition to raising the bar for safer chemical use and management within our own supply chain, we continue to advocate for broader adoption of green chemistry among chemical manufacturers and among others in our industry. Through the guidance we provide directly to suppliers, our annual Supplier Responsibility Report, and in other industry forums, we continually educate and widely promote the use of the EPA Safer Choice program among our suppliers, and encourage use of EPA's Safer Chemical Ingredients List where applicable.

PHOTO: *2019 APPLE GREEN CHEMISTRY FORUM; SHANGHAI SESSION*

At our Green Chemistry Forum, an annual gathering of Apple suppliers, we educate and communicate on a variety of issues related to green chemistry, particularly the concept of safer chemical alternatives. In 2019, we held two sessions for more than 200 suppliers in Shanghai and Shenzhen. One of the main topics of discussion was the importance of safer cleaners, which included educating suppliers on frameworks like EPA's Safer Choice.

We are also committed to helping scale solutions for wider adoption of safer alternatives, in order to protect people working in supply chains around the world. To achieve this, we are currently working collectively with other organizations to achieve three objectives:

1) A clear, globally-recognized criteria for what constitutes a "safer" alternative;
2) A recognized organization to assess, manage and act as the standard bearer for the approved list of chemicals that meet that criteria; and
3) An ecosystem of stakeholders (governments, chemical manufacturers, end-users, industry leaders, etc.) working collectively to create an enabling environment for broader change.

In 2019 we also partnered with Clean Production Action (CPA) to create a new GreenScreen Criteria for Safer Cleaners that, along with EPA's Safer Choice, will become the backbone of Apple's new Safer Cleaner Criteria.

Conclusion

People are at the heart of every decision we make at Apple, from the products we create to the way we create them. That's why we take into consideration the full experience of a supplier employee when selecting and managing the chemicals that are used in the production of Apple products.

Over the course of 2020, we plan to openly share our research into safer alternatives, including the updated GreenScreen Criteria for Safer Cleaners. And with the help of government agencies like EPA, and industry partners, such as Clean Electronics Production Network (CEPN), we will continue to help drive stronger industry standards that will encourage and enable other brands, suppliers, and chemical manufacturers to more rapidly develop and adopt safer alternatives, leading to even safer and healthier workplaces throughout the industry.

We take very seriously our responsibility to not only determine and use safer and greener chemicals in our own supply chain, but to also work collectively with others to increase demand for safer alternatives and accelerate their adoption. We know that our work will never be finished, and we are always looking for ways to do more, and to be better.

In conclusion, we are pleased to submit this application for consideration to the EPA, the world's leading regulatory body on environmental and chemical safety standards. Our program gaining the recognition of the EPA would go a long way in helping to scale and accelerate our efforts to protect people and the planet.